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Role Of Microorganisms in The Hologenome Theory Of Evolution

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Hologenome theory of evolution is the one that considers the holobiont i.e all plants and animals associated with all of its Microorganisms together as a selection unit in evolution. The sum of genetic information of the host and its microbiota can be called as hologenome. This theory of evolution is mainly based on four generalizations: (1) Symbiotic relationship of all plants and animals with microorganisms. (2) Transmission of symbiotic microorganisms between generations. (3) Within the environment the association of the host and the symbionts affects the fitness of the holobiont. (4) Any changes in either the host or microbiota genomes can bring about variation in hologenome under environmental stress. These generalizations when taken together suggests that diverse microbial symbionts can play a major role in adaptation and evolution of higher organisms through their genetic wealth. The diverse microbial symbiont community can thereby aid the holobiont in surviving, multiplying and buying the suitable time necessary for the host genome to evolve during the periods of rapid changes in the environment. The hologenome theory of evolution has a distinguishing feature that considers all of the diverse microbiota associated with the plant or the animal as a part of the evolving holobiont. Thus microorganisms due to their great biodiversity aids in evolution of the holobiont. This abstract highlights the various aspects of hologenomic theory of evolution through microorganisms in the area of microbiology.

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